

Transforming homes from smart to smart and sustainable

by Schneider Electric

Executive summary

Since arriving in our homes, smart technology has put welcome conveniences at our fingertips. We can now monitor and adjust the status of the appliances and gadgets in our smart homes at any time, from anywhere, directly from our smartphones. However, with a growing demand for energy in our homes, exacerbated by the COVID-19 pandemic, it is becoming increasingly clear that our living spaces need to be not only smart but also sustainable. Sustainability is a growing concern for home buyers across the U.S. and builders can take advantage of this by designing new homes that make sustainable living easily accessible for their customers.

Homeowner Beliefs About Energy Use

A recent study commissioned by Schneider Electric examines attitudes toward energy use and smart home technology in the United States. The good news is, this technology is going mainstream, with consumers embracing the cost savings, energy efficiency, and home security that it delivers. However, homeowners are less aware that 62% of electricity comes from burning fossil fuels, and 13% of all emissions are directly tied to commercial and residential [usages](#). The study also revealed that consumers largely believe industrial facilities and transportation are responsible for carbon emissions. Nevertheless, the majority of consumers believe it is important to reduce their carbon footprint and the amount of energy they use at home.



Bottom Line: Builders play a big role in helping consumers live in more sustainable homes and solutions exist to help builders deliver this sustainable living. Homeowners, along with home builders, property developers, architects, and contractors, are essential players in this effort. Solutions exist today that will allow us to make our homes not only smart, but sustainable, as well.

Making our homes more sustainable

If our homes are to become more sustainable, they must change. Residential buildings are directly responsible for more than 20% of U.S. emissions. This jumps to 80% if we consider indirect [emissions](#), yet most homeowners are unaware of the impact that their homes are having on our climate.

According to the recent study conducted by Schneider Electric, only 48% of consumers in the United States feel it is their personal duty to reduce energy use at home, and less than one in four feels guilty about the amount of energy they use. Furthermore, most consumers think that large businesses, such as industrial centers and the transportation industry, hold the most responsibility for carbon emissions.

Nevertheless, 45% of homeowners are looking for ways to reduce the amount of energy they use, and 31% would like to find an easy way to track their energy use at home. These last two statistics are encouraging, particularly for home builders that focus on building sustainable homes or cater to a more cost-conscious buyer. Active energy management is essential to helping homeowners be more efficient with their energy consumption. And while homeowners may embrace this practice primarily to reduce their energy consumption and cost, active energy management will also lessen their home's carbon footprint and work toward making it a sustainable building.

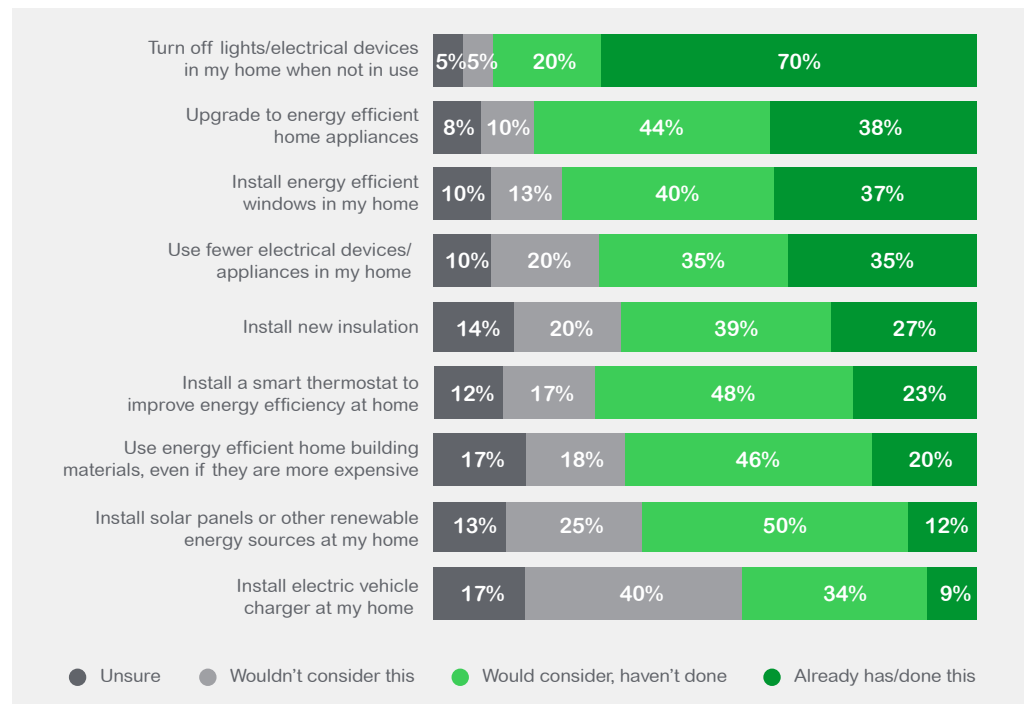


Figure 1
Consideration of Ways to Be Sustainable At Home

Meeting resiliency challenges

Escalating energy use at home in recent years has generated two growing concerns. The first involves electrical faults. Despite the best efforts and safety focus of manufacturers, installers and inspectors, home electrical problems caused an estimated 67,800 home fires and \$868 million in property losses according to recent data from the United States Fire Administration ([USFA](#)). Much of this damage can be avoided if we make our homes more resilient through predictive electrical technology and intuitive safety mechanisms.

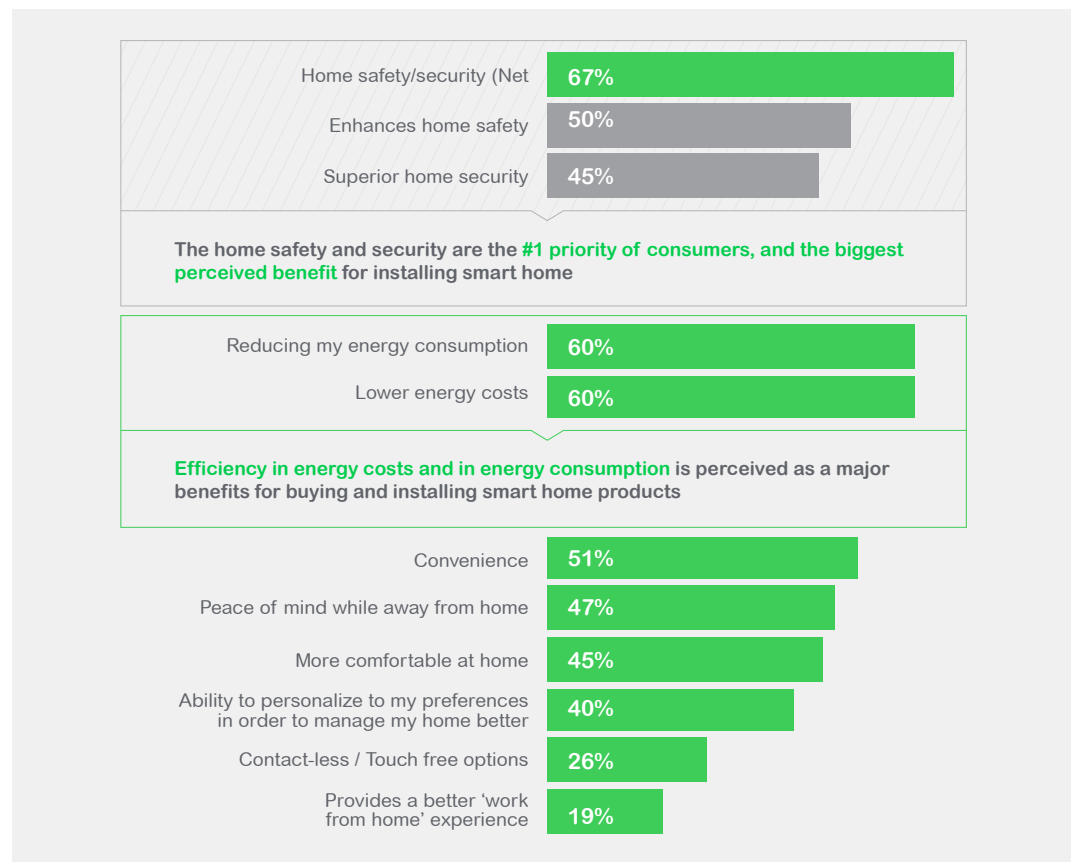
The second concern relates to sustainability and the impact of carbon emissions on the environment. Extreme weather events due to climate change, including wildfires, storms, and heatwaves, are increasing in both frequency and intensity. Such weather not only endangers lives, but also represents an ongoing threat to power continuity, which is crucial to life at home. This is compounded by the record number of people now working and learning from home. According to findings from the Schneider Electric study, 67% of consumers place safety and savings at the top of the list of smart home benefits, followed by reduced energy consumption and costs, which are mentioned by 60%.

The universal connectivity made possible by smart technology helps ensure protection against fire and natural threats, as well as new digital dangers posed by humans. Electrical products and processes that meet cybersecurity certification standards guard against cyber threats. Energy management software optimizes usage efficiency.

And electricity options beyond traditional providers, thanks to microgrids and onsite energy generation and storage, ensure power continuity in the event of outages. The pandemic has heightened the importance of such continuity, where 38% of consumers now place a stronger priority on having reliable, high-speed access to the Internet.

Figure 2

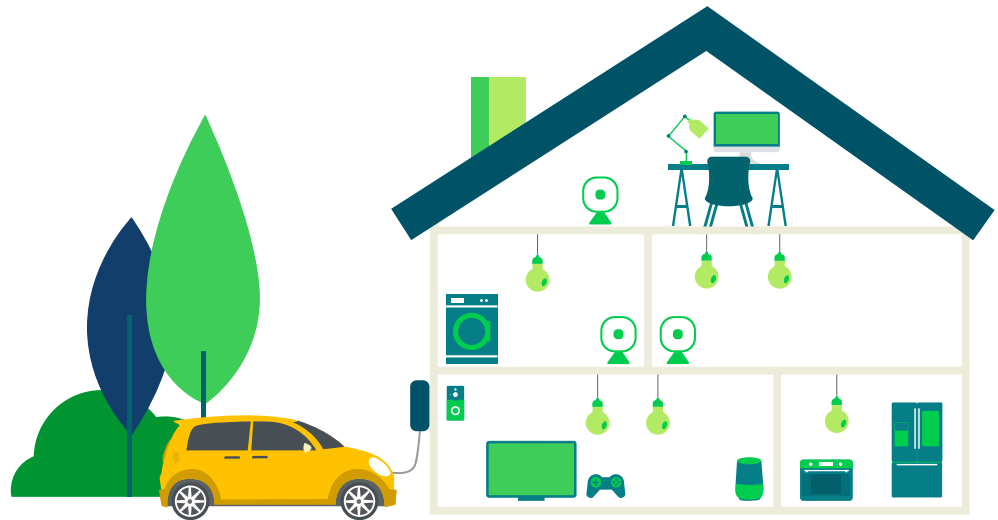
Safety, security and energy efficiency are high in the perceived benefits of smart home technology



Countering consumption with efficiency

Demand, not supply, drives energy transitions. Our lives at home involve more electric gadgets and appliances than ever before, with electricity becoming consumers' fuel of choice for cooking, lighting, and powering household electronics. A growing number of people are now charging electric vehicles at home, representing a significant new increase in the demand for home energy usage. In the midst of these new demands, energy costs have been trending upward over the last decade, with the expectation to [continue](#).

To help home buyers overcome this one-two punch to their wallet, home builders can include in energy management solutions that help their customers actively manage their consumption. By combining smart devices with energy management software, home builders can help customers take control of their electricity consumption and achieve optimal efficiency.



As noted earlier, lower energy costs and reduced energy consumption are among the top benefits identified by homeowners who own a smart home device. This is especially true of Boomers, with 75% of them more likely to focus on the benefits of cost savings in their consideration of smart home technology.

A comprehensive home energy management system provides the ultimate payoff, delivering hyper-efficiency while advancing sustainability. In the near future, net zero homes will be possible as demand-side management solutions couple multiple energy sources, including onsite and microgrid supplies, with the loads of everything from appliances and EVs to HVAC systems.

Adding a personal touch

Smart solutions make life easier, increase safety and comfort, and add value to residential properties. According to the Schneider Electric study, 48% of U.S. consumers say that smart home technology makes a home or rental more desirable.

In a post-pandemic world, this perception is likely to continue. With work and schooling from home options likely to continue on some level, the need to carve out places within the home that cater to the needs of each family member has gone from a nice-to-have to a must-have. Smart technology and digitization make it possible, giving us greater control over our home's functionality while enabling us to create spaces that foster productivity, comfort, and well-being.

Architects, home builders, and contractors are taking notice of consumer interest in smart home technology, and for good reason. According to the Schneider Electric study, 36% of consumers believe smart home products should be standard in newly built homes.

36%

of consumers believe smart home products should be standard in newly built homes.

Figure 3

Attitudes Towards Smart Home Products



In the future, residential living will be a more personalized experience, with smart technology enabling the home to interact with individual family members and provide actionable insights and advice for each of them. For example, a smart home system can tell homeowners when to do their laundry or run their dishwasher based on their utility's time-of-use electricity rates; help them plan solar energy usage based on upcoming weather forecasts; automatically adjust lighting in different rooms at different times of day based on the season; and so much more.

Living smart after COVID-19

Extrapolating from the Schneider Electric study's finding that 43% of U.S. respondents have considered changing the location or the structure of their homes since the onset of the pandemic, as of October 2020, [8.93 million people](#) had done so. With this flight to less densely populated suburbs and the countryside, new construction is on the rise, as well as retrofits of existing homes.

Accompanying these relocations is a willingness by consumers to make changes to reduce their energy use. Already 70% are turning off lights and electrical devices in their homes when they are not in use. Consumers are also ready to invest in solutions that may help to conserve energy. On average they are willing to invest just over \$3,000 on energy efficient home improvements over the next three years.

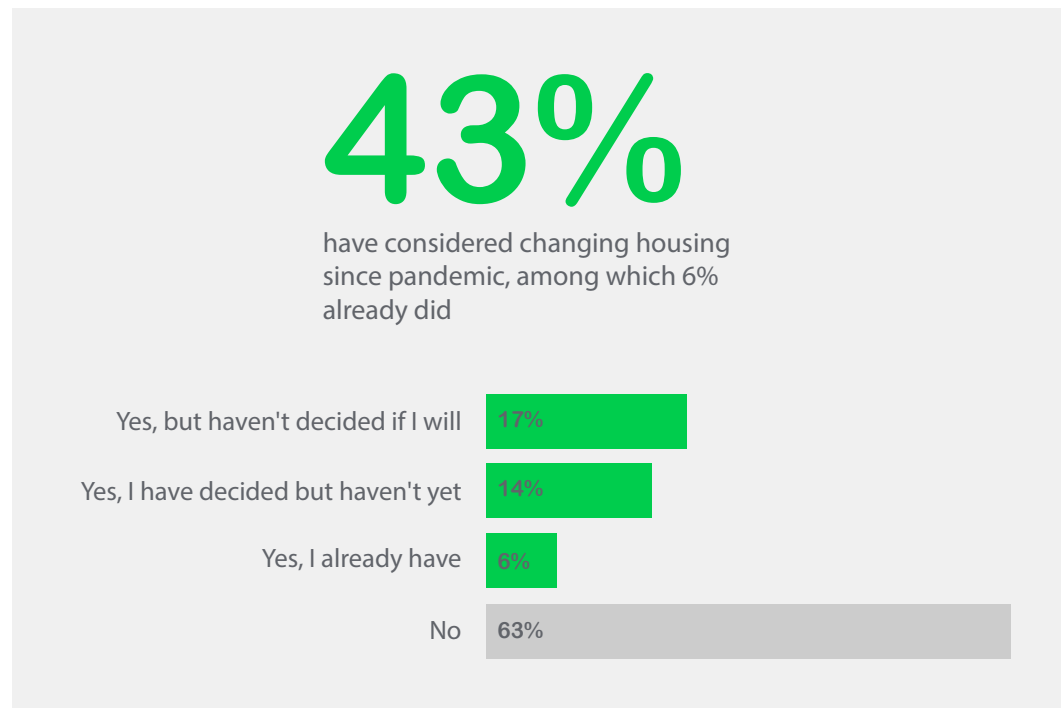


Figure 4

Consumers willing to change housing since pandemic

As we move beyond COVID-19, consumers will have more control over their home's energy usage, making it easier to conserve resources and reduce the impact on the environment and their home energy bills.

The path to more sustainable and net zero homes

Net zero homes are growing in popularity because they produce as much energy as they consume, resulting in a zero energy bill and a carbon-neutral home.

There is an ever-increasing array of tools and technologies that make net zero homes achievable, including:

- Solar panels
- Energy-efficient certified appliances
- Geothermal pumps
- Smart thermostats
- Weather-sealed doors and frames
- Radiant floor heating
- Home energy management systems

According to [Navigant Research](#), net zero housing stock is expected to increase by 28% between 2019 and 2028, from 57,800 households to 534,500. And nearly half the world's GDP is now generated in places where regulators have set or are proposing to set targets to bring carbon emissions to net zero by or before 2050.

An essential component of net zero homes is an energy management system. The Connected home solutions from Schneider Electric empowers U.S. homeowners to monitor and control their energy use through smart technology.

Figure 5

Ways to make a home more sustainable and net zero



The Connected Home Solutions approach to sustainable homes

The Connected Home Solutions from Schneider Electric is a fully open system, able to interact with different platforms and devices, and allows users to monitor their home's connected and non-connected devices with a single mobile app. Among its capabilities, the Wiser Energy solution:

- Keeps tabs on a home's electrical activity from anywhere via a phone or tablet
- Provides insights into energy use for greater savings
- Sends mobile alerts when appliances turn ON or OFF
- Integrates with Amazon Alexa®, Google Home™, Philips Hue, Wemo® Insight, and more

The Connected Home also lets homeowners set energy usage goals, estimate monthly energy bills, and take proactive action to cut energy waste. If your home is solar-equipped, you can view solar generation, take advantage of cheaper, off-peak energy, and monitor the return on your solar investment. Safety concerns? The system detects electrical use and sends notifications via the app, for example when your garage door opens or if you forgot to turn off your curling iron.

Conclusion

If the world is to meet ambitious goals for climate-neutrality by 2050, residential buildings must play an essential role. Currently they are responsible for up to 34% of carbon dioxide emissions. A study by Schneider Electric shows that many Americans embrace smart technology for the energy efficiency and cost savings that it delivers. They also believe it is important to reduce their home's carbon footprint. Solutions are available now to put homes on the path to net zero emissions, including Wiser by Schneider Electric. Equipped with these proven tools, homes can become more sustainable, resilient, efficient, and personalized. Homeowners will be able to save money and energy while doing their part to save the planet.

Key Report Findings

- ① With many topics of concern competing for consumers' attention, 'energy efficiency' resonates better than sustainability or climate change.

Two-thirds of consumers feel home energy efficiency is important, while only half feel carbon emissions are a threat and that reducing their home's carbon footprint is important.
- ② Consumers believe industrial facilities and transportation are responsible for carbon emissions – few fault residential buildings. And, most place responsibility on business and government to reduce energy usage rather than on themselves.

Less than half feel it's their personal duty to reduce energy use at home and less than 1-in-5 feel guilty about the amount of energy they use; however, 41% are still looking for a solution to track energy use and ways to reduce home energy costs – though it can't be at the expense of comfort.
- ③ Privacy, cybersecurity, and cost are barriers to smart home tech adoption; however, energy and cost savings potential – plus increased home security and safety – keeps consumers interested.

Just under half of consumers would be concerned about their privacy while using smart devices and think that smart home tech is just too expensive, but the same proportion are also interested in how these products can reduce home energy bills, and over two-thirds recognize the safety/security benefits of smart home tech. There's also a general openness to upgrading to energy efficient appliances, installing a smart thermostat, and using energy efficient home building materials – even at an additional cost.
- ④ People acknowledge smart home tech makes life easier, makes their home more comfortable, and makes a home more desirable, but top benefits across countries are reducing energy consumption and lower energy costs.

Across device types, consumers who have smart home tech are satisfied with their purchase and would do so again. They cite ease of use and energy savings are their top motivators for purchasing.
- ⑤ Despite covid-19-related work, education, and lifestyle shifts, less than half (4-in-10) have considered changing their housing situation. Among those who are looking for a change, a smart tech-equipped home could be a selling point for some.

The changes consumers seek in a new home are mixed as some are looking for a larger home, yet 1 in 5 are looking for a smaller home. A private outdoor space is also a key attribute of an ideal home today. A quarter of consumers would pay more for a home with smart home technology, and more than a third find it does make a home more desirable and feel it should be a standard in new construction: half say they expect smart home tech to be a standard in new builds, and they're more likely than other countries to pay a premium for smart tech-equipped homes.

To review the complete study or for more information, visit se.com/us/connectedhome